DEVELOPING LAND COVER AND VEGETATION CLASSIFICATION STANDARDS

- NASA DATA SYSTEMS WORKING GROUP
  Oct. 25-27 Mtg

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DEVELOPING LAND COVER AND VEGETATION CLASSIFICATION STANDARDS

- A. Content: What is the (emerging) standard?
- B. What is the standards process?
- C. Where is the leadership to get it reviewed?
- D. Who are the community of users?

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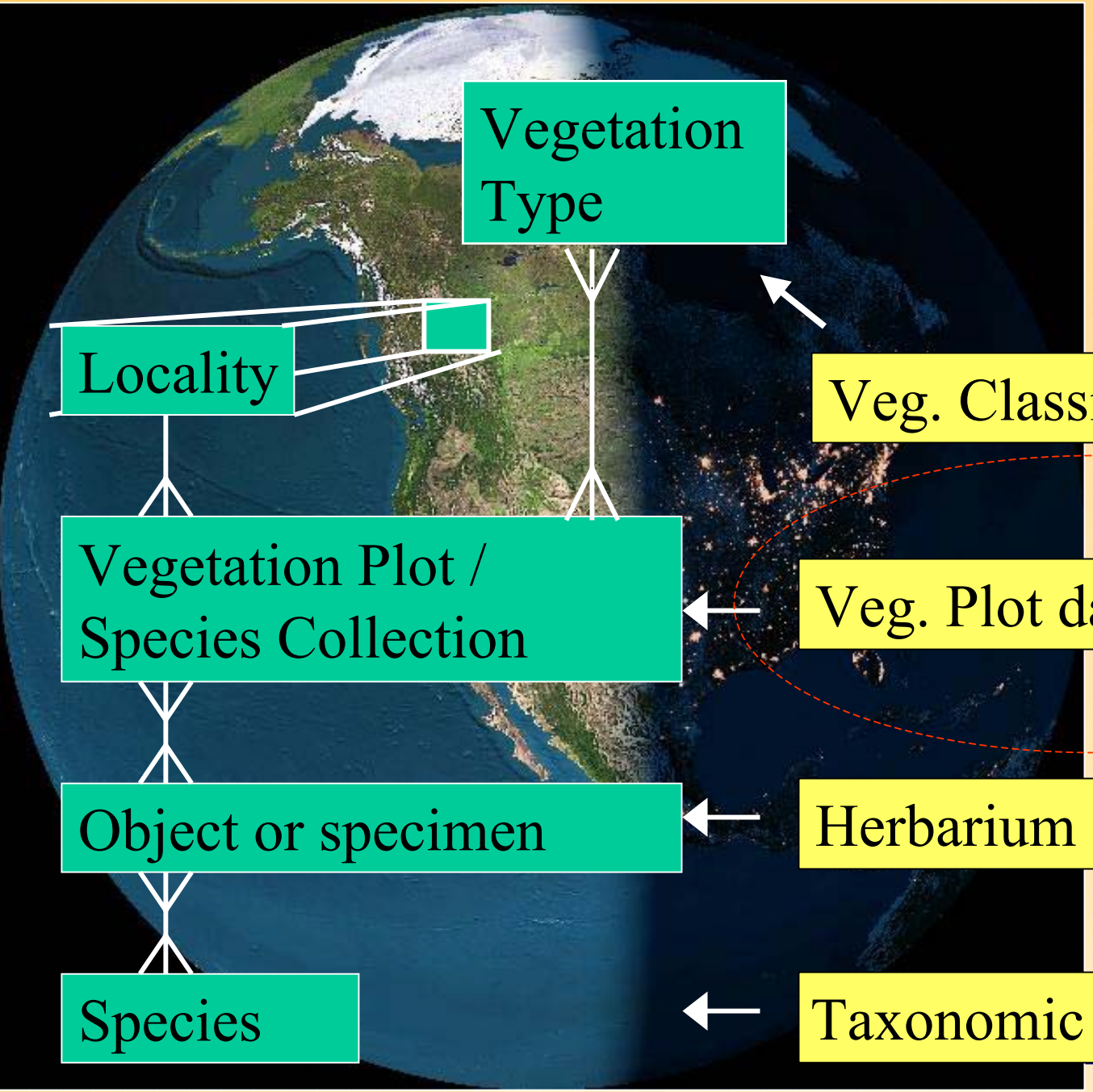
Biodiversity data structure



Veg. Classif. databases

Veg. Plot databases

Herbarium databases

Taxonomic databases

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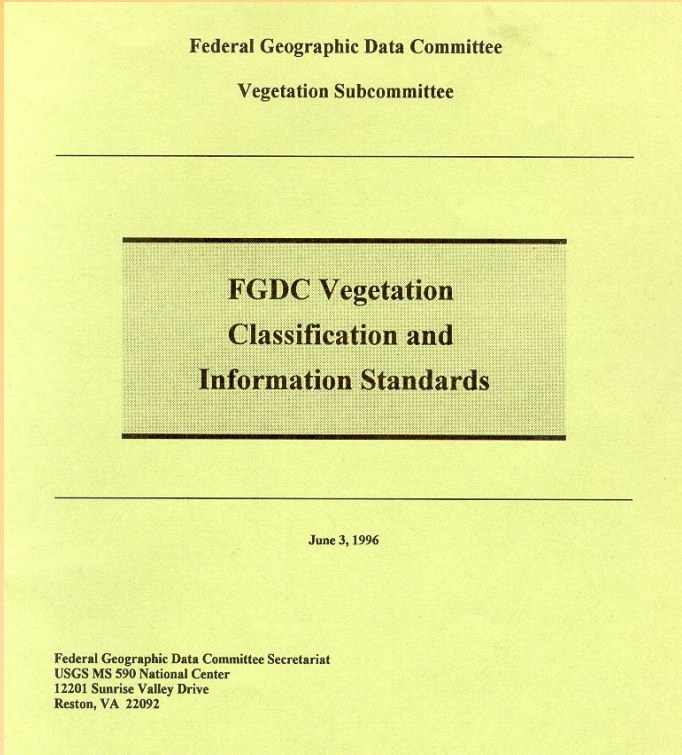
LAND COVER AND VEGETATION CLASSIFICATION STANDARDS

A. What is the (emerging) standard?

FGDC 1997. U.S. National Vegetation Classification Standard based on 1973 UNESCO / IVC framework

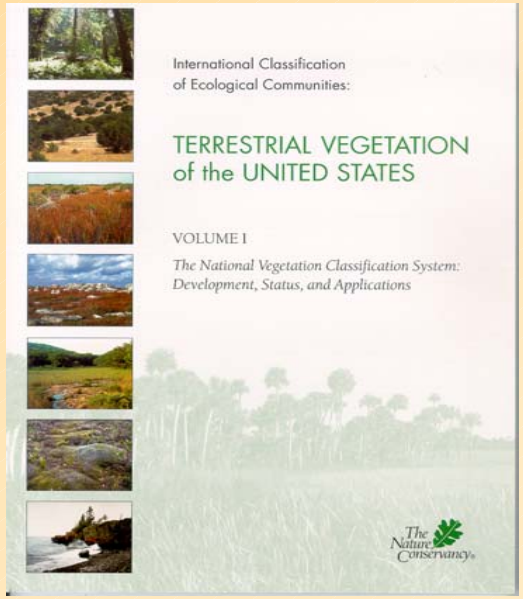

Federal Geographic Data Committee

Vegetation Subcommittee

FGDC Vegetation Classification and Information Standards

June 3, 1996

Federal Geographic Data Committee Secretariat
USGS MS 590 National Center
12201 Sunrise Valley Drive
Reston, VA 22092



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LAND COVER AND VEGETATION CLASSIFICATION STANDARDS

A. What is the (emerging) standard?

- Purpose and Scope (from FGDC 1997, p 4):
  - Fosters accuracy, consistency, and clarity in the structure, labelling, definition, and application of a systematic vegetation taxonomy for the U.S.
  - Establishes a national set of standards for classifying existing vegetation cover and its associated information for the U.S and its Trust Territories that will be used by Federal agencies to develop and report national statistics.
  - Develops federal minimum metadata requirements…Both the classification standard and the metadata requirements may be used nationally to link local level vegetation inventory and map efforts.

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LAND COVER AND VEGETATION CLASSIFICATION STANDARDS

A. What is the (emerging) standard?

- A national standard, but with international perspective.
  - UNESCO hierarchy was the basis for the physiognomic part of the standard.
- A list of guiding principles for what constitutes a good set of classification units
- A standard, comprehensive list of physiognomic units.
- A provisional set of floristic units, with note that standards are needed for these units.
- A set of requirements:
  - **data collection and management** for vegetation classification and reporting at different levels of the hierarchy
  - Management and reporting of vegetation information associated with vegetation maps

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USNVC / IVC Hierarchy

TERRESTRIAL VEGETATION

	Formation Class	Woodland
	Formation Subclass	Evergreen Woodland
	Formation Group	Temperate or Subpolar Needle-Leaved E.W.
Physiognomic Levels (units adopted)	Formation Subgroup	Natural…
	Formation	Conical-Crowned…
Floristic levels (units provisional)	Alliance	Douglas Fir Woodland Alliance
	Association	Douglas Fir / Idaho Fescue Woodland

Grossman et al. 1998; FGDC 1997, UNESCO 1973

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FGDC 1997: A process to help users classify vegetation at the lowest floristic levels will be developed in the future involving Federal, State, and private agencies and professional organizations.

ESA Guidelines Version 4.

	FGDC 1997 standard
	DIVISION ORDER
1	CLASS
2	SUBCLASS
3	GROUP
4	SUBGROUP
5	FORMATION
6	*ALLIANCE*
7	*ASSOCIATION*

Units explicitly defined / adopted

Units adopted through peer review

B. What is the standards process?

1. FGDC 12 – step process.
2. Internal standards process FGDC 1997:

- "The National Vegetation Classification Standard will be subject to periodic review and updates."

- "It is necessary that the NVCS continue to improve with new information and knowledge about species assemblages across the landscape in relate to succession, disturbance…etc."

Fundamental problems with the current upper levels of the NVC led to agreement to revise them.

Hierarchy Revisions Working Group Members

CANADA

- Del Meidinger (British Columbia Ministry of Forests)
- Serguei Ponomarenko √ (NatureServe Canada)
- Jean-Pierre Saucier (Ministère des Ressources naturelles, Québec)

UNITED STATES

- Don Faber-Langendoen √ (NatureServe, co-chair)
- Andy Gray (U.S. Forest Service)
- Bruce Hoaglund √ (University of Oklahoma)
- Sherm Karl (U.S. Bureau of Land Management)
- Todd Keeler-Wolf √ (California Department of Fish and Game)
- Greg Nowacki (U.S. Forest Service)
- Dave Tart (U.S. Forest Service, co-chair)
- Alan Weakley (University of North Carolina, N.C. Botanic Garden)

LATIN AMERICA

- Carmen Josse √ (NatureServe)
- Otto Huber (Director of the COROLAB, Venezuela, Italy)
- Alejandro Velasquez Montes (Universidad Nacional Autónoma de México, Mexico)

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Recommendation 2 improves linkages to Land Cover (e.g. FAO)

Primarily Vegetated				Primarily Non-Vegetated			
(Semi) Natural Vegetation		Cultivated and Managed Areas		Natural Bare Areas		Artificial Surfaces	
(semi) Natural Terrestrial Veg.	**(semi) Natural Wetland Veg.**	Cultivated and Managed Terrestrial Veg.	Cultivated Wetland Veg.	Bare Terrestrial Areas	Natural Water-bodies, Snow & Ice	Artificial Terrestrial Surfaces	Artificial Waterbodies, Snow and Ice
Modular Criteria	**Modular Criteria**	Modular Criteria	Modular Criteria	Modular Criteria	Modular Criteria	Modular Criteria	Modular Criteria

FAO 2000: LCCS

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RECOMMENDED REVISION - 2

CATEGORY 1	CATEGORY 2	Hierarchy Level 1
VEGETATED	**(SEMI) NATURAL**	Forest and Woodland
AREAS	**VEGETATION**	Shrubland and Grassland
		Semi-Desert Vegetation
		Polar and High Montane Vegetation
		Aquatic Vegetation
		Nonvascular-Sparse Vascular Vegetation
	CULTURAL	Agriculture
	VEGETATION	Pasture/Hay
		Cultivated Crops
		Woody Agricultural Crops
		Non-Agricultural Vegetation [Developed]
		Managed Herb Vegetation (Lawns, Parks, etc)
		Managed Woody Vegetation
NON-VEGETATED		

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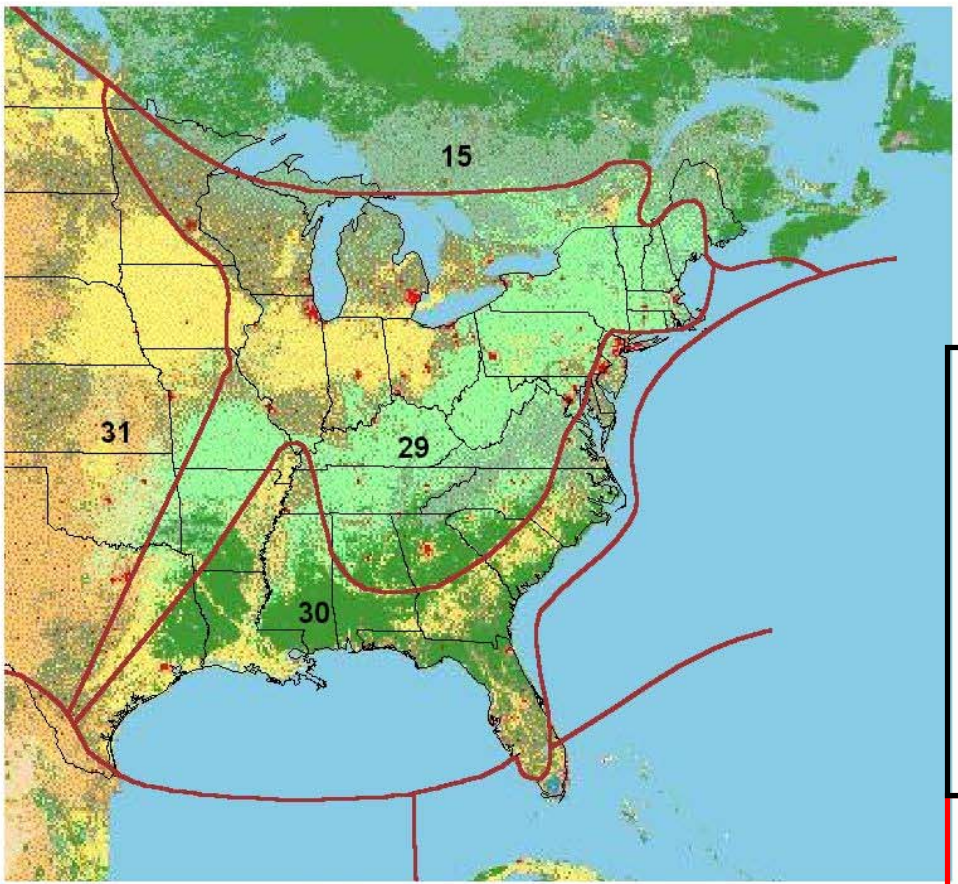
Hierarchy Revisions: Applications to Mapping :Eastern North America



BIOGEOGRAPHIC SUBFORMATIONS

Subformation Boundary

15	Canadian
29	Eastern North American
30	Southeastern North American
31	North American Prairies

IGBP-DIS LAND COVER CLASSIFICATION

NAT / SEMI-NAT VEG

- Evergreen Needleleaf Forest
- Evergreen Broadleaf Forest
- Deciduous Needleleaf Forest
- Deciduous Broadleaf Forest
- Mixed Forest
- Closed Shrublands
- Open Shrublands
- Woody Savannas
- Savannas
- Grasslands
- Permanent Wetlands

CULTURAL & NON- VEG

- Croplands
- Urban and Built Up
- Cropland/Natural Vegetation
- Snow and Ice
- Barren and Sparsely Vegetated
- Water

Note:
IGBP-DIS (International GeosphereBiosphere Programme - Data and Information System) Land Cover Classification was obtained from the USGS EROS Data Center (http://edcdaac.usgs.gov/glcc/glcc.html)

Biogeographic subformations are adapted from Taktajan, A. L. 1986. Floristic Regions of the World. Berkeley and Los Angeles.

C. Where is leadership for review?

- U.S.: FGDC (federal agencies), NatureServe, Ecological Society of America, state partners
- Canadian NVC: Canadian Forest Service, NatureServe-Canada, provincial governments.
- Mexican NVC: (various)
- Various Latin American partnerships

Canadian NVC

- CNVC Technical Committee and Steering Committee
- CNVC TC is represented on HRWG and has been reviewing HRWG materials
- Decisions about use of the IVC structure still pending

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US-NVC PARTNERSHIP

- FEDERAL AGENCIES
- NATURESERVE
- ECOLOGICAL SOCIETY OF AMERICA
- STATE AGENCIES and ORGANIZATIONS

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IVC and Mexican NVC

Sistema Jerárquico Estandarizado para la Clasificación de la Vegetación México (Velazquez et al. 2005)

Revised Hierarchy May 2005. FGDC			**Niveles Jerárquicos Sis Jer Est Cla Veg Mex**		
Upper	Level 1	Formation Class	**Fisonómicos/ Climáticos**	Nivel 1	Bioma/Clase
	Level 2	Formation Subclass		Nivel 2	Gran Formación/ Subclase
	Level 3	Formation		Nivel 3	Formación/Formación
Mid	Level 4	Formation Realm	**Fisonómicos/ Florísticos**	X	Not included
	Level 5	Floristic Group (?)	**Florísticos**	**X**	Not included
	Level 6	Order (?)		Nivel 4	Subformación /Orden
Lower	Level 7	Alliance		Nivel 5	Serie de Asociaciones /Alianza
	Level 8	Association		Nivel 6	Asociación /Asociación
				Nivel 7	Subasociación /Subasociación
				Nivel 8	Facies/Facies

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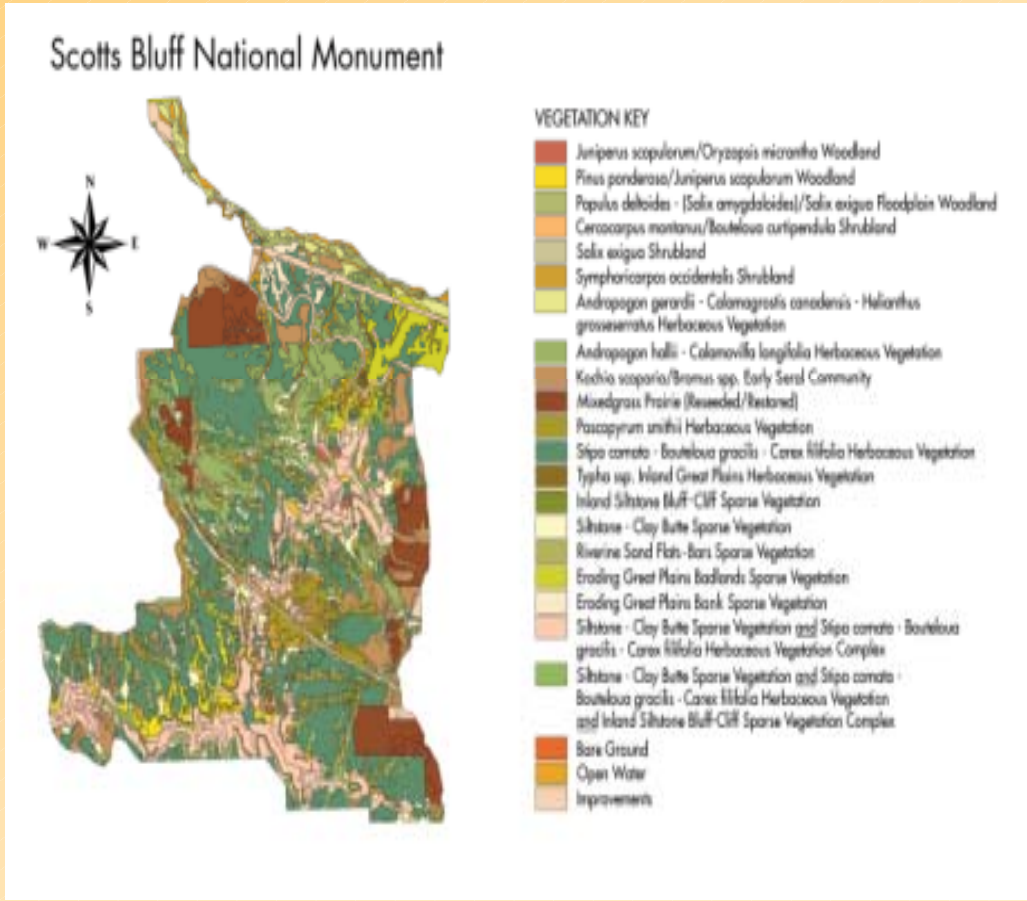
D. Who are the community of users?

- Federal agencies (especially land management agencies
- Conservation organizations
- Academic partners
- International partners
- Anyone collecting vegetation plot data (students, academics, consultants, agencies)

Ecological Classification (USNVC): In Use at National Parks

- Partnership with USGS and NPS to classify and map vegetation in 270 national park units
- 90 parks completed or ongoing, including Yosemite, Glacier, Mt. Rushmore, Scotts Bluff
- Maps are used for park management and planning, education and interpretation, fire management, research, and habitat modeling



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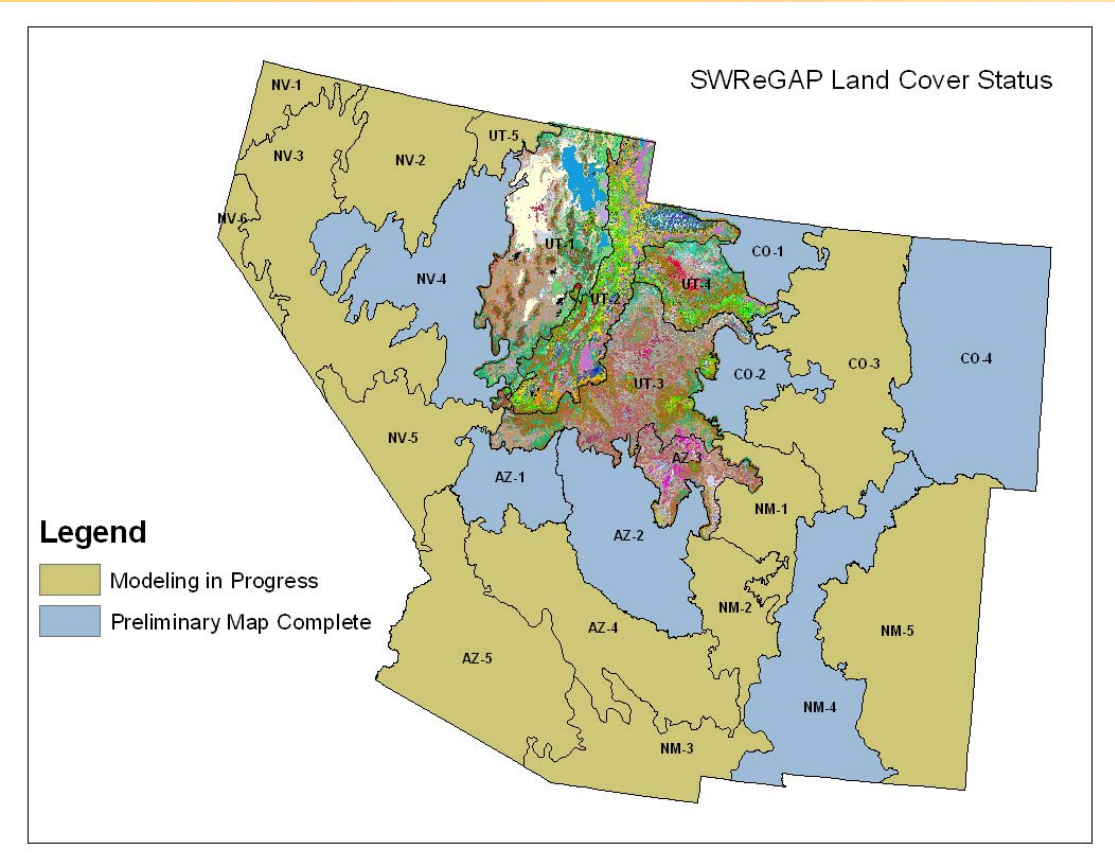
Comprehensive National Mapping Projects



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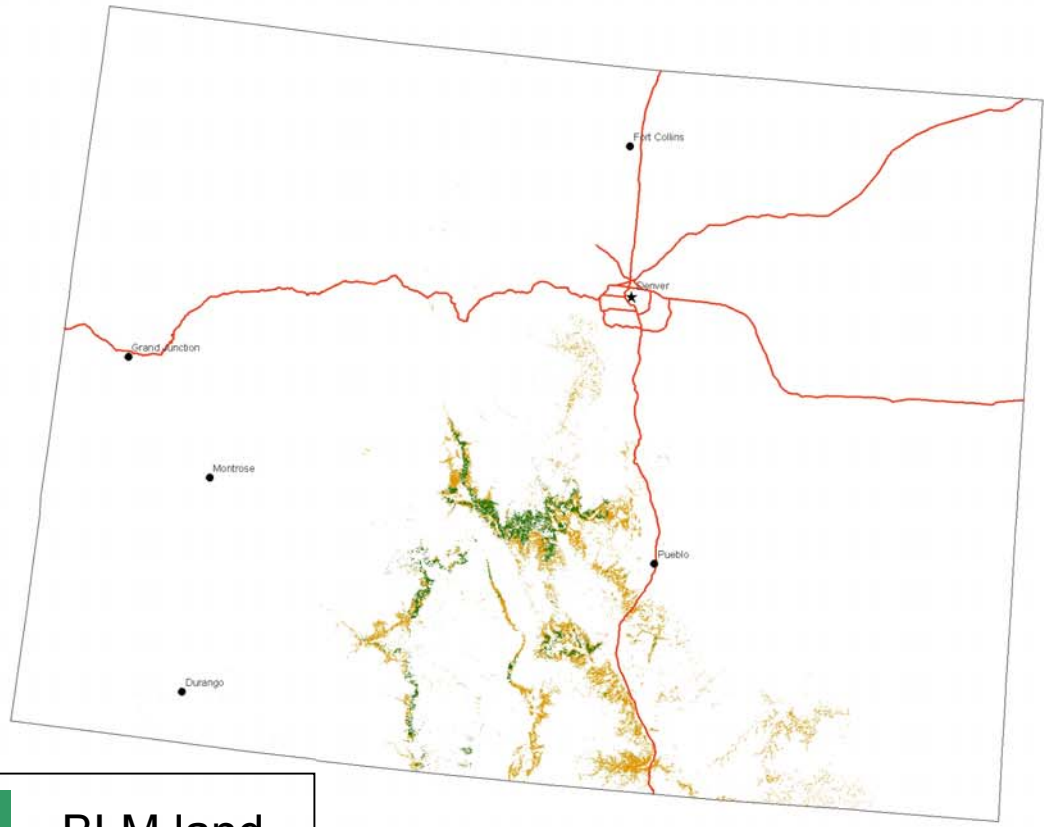
Ecological System Type on BLM Lands in Colorado

Southern Rocky Mountain Pinyon-Juniper Woodland



BLM land

Other lands

0 45 90 180 270 360
Kilometers

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